

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking to Consider  
Alternative-Fueled Vehicle Programs, Tariffs,  
and Policies.

Rulemaking 13-11-007  
(Filed November 14, 2013)

**COMMENTS OF ENVIRONMENTAL DEFENSE FUND ON THE  
TRANSPORTATION ELECTRIFICATION WORKSHOP AND ELECTRIC VEHICLE  
STRAW PROPOSAL**

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**I. INTRODUCTION**

Pursuant to the Scoping Memo issued by Commissioner Peterman<sup>1</sup> and the transportation electrification workshop held on April 29<sup>th</sup> (Workshop), Environmental Defense Fund (EDF) submits the following comments. In these comments, EDF will focus on three issues: (1) the need for utilities to consider new utility business models, as stated by multiple persons at the Workshop; (2) the need to more concretely consider rate design; and (3) the absence of a requirement for effective load management within utility applications.

**II. RESPONSE TO SPECIFIC QUESTIONS**

1. *In what ways should the Application Guidance Straw proposal in Appendix A of the Scoping Memo be better modified to better align with the mandates of SB 350?*

A. Utilities should include proposals in electric vehicle applications that contemplate revision of their business model.

At the Workshop, multiple parties recognized the need for a revision of utility business models in order to encourage the growth of electric vehicles (EVs) in a manner that helps

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<sup>1</sup> *Amended Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge*, Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies, R. 13-11-007 (filed Mar. 30, 2016).

achieve California's important zero-emission vehicle (ZEV) and clean energy goals.<sup>2</sup> Rather than giving utilities rate-of-return revenue, in which there is little incentive for utilities to ensure they are delivering on their promises, the Commission should consider transitioning to a performance-based model that could take the form of either a more common performance-based rate-of-return adder or fees for services. Shareholders should obtain rewards based on agreed-upon performance after that performance is demonstrated using robust monitoring and evaluation methods.

EDF has made the case for revising the utility business model in other proceedings, and believes that investors and investor-owned utilities should be rewarded for using distributed energy resources, including EVs, in a way that returns the most benefit to the grid, the environment, and the customer.<sup>3</sup> Such an approach would align utility incentives with achieving the goal of putting 1.5 million EVs on the road by 2025, as well as the requirement in Senate Bill (SB) 350 of increasing transportation electrification in order to achieve long-term greenhouse gas (GHG) emission reduction goals<sup>4</sup> – and thus properly belongs in the straw proposal. In contemplating this issue, this proceeding should be coordinated with other dockets that are addressing this idea in varying capacities.<sup>5</sup>

In order to see the amount and type of innovation necessary to make important strides towards putting more EVs on the road, there needs to be an open marketplace (i.e., one that does

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<sup>2</sup> ICF International, *California Transportation Electrification Assessment*, Prepared for CPUC Workshop on SB 350 (Apr. 29, 2016); San Diego Gas & Electric, *SB 350 Transportation Electrification Workshop* (Apr. 29, 2016).

<sup>3</sup> *Opening Comments of Environmental Defense Fund on the Assigned Commissioner's Ruling Introducing a Draft Regulatory Incentives Proposal for Discussion and Comment*, Order Instituting Rulemaking to Create a Consistent Regulatory Framework for the Guidance, Planning, and Evaluation of Integrated Distributed Energy Resources, R. 14-10-003 at 2 (filed May 9, 2016).

<sup>4</sup> See, e.g., Senate Bill 350 (de León), Section 740.12 (2015).

<sup>5</sup> See, e.g., *Assigned Commissioner's Ruling on Guidance for Public Utilities Code Section 769 – Distribution Resource Planning*, Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Development of Distribution Resources Plans Pursuant to Public Utilities Code Section 769, R. 14-08-013 at 4 (filed Feb. 6, 2015); *Decision Resolving Several Phase Two Issues and Addressing the Motion for Adoption of Settlement Agreement on Phase Three Issues*, Order Instituting Rulemaking to Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements, R. 13-09-011 at 69-70 (issued Dec. 9, 2014).

not have unnecessary barriers to entry and regulatory roadblocks) that rewards innovative market actors for providing EV grid services. Without such a marketplace for utilities and third party providers alike to be able to readily provide products and services, it will be much more difficult, and likely more expensive, to achieve ambitious state goals – particularly given that the transportation sector is responsible for the greatest percentage of emissions in California.<sup>6</sup>

B. Rate design should be a key component of the straw proposal.

One of the most exciting aspects of San Diego Gas & Electric’s (SDG&E) Vehicle-Grid Integration (VGI) pilot was its inclusion of a dynamic, day-ahead hourly rate.<sup>7</sup> Such a rate has great potential to aid the increased use of EVs as a cost-effective means to integrate more renewable energy, and thus, enable increased use of a readily available and low-cost storage source to facilitate the state’s climate and clean energy goals.

The straw proposal states that “applications must...account for ratepayer interest as defined in [SB 350] Section 740.8.”<sup>8</sup> Section 740.8 includes economic benefits among those that are considered to be in the ratepayer interest<sup>9</sup> – and there is clear evidence that dynamic pricing can help many customers see bill savings.<sup>10</sup> As such, it would be appropriate to include specific

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<sup>6</sup> The transportation sector is responsible for 37 percent of greenhouse gas emissions. California Air Resources Board, California GHG Emission Inventory – 2015 Edition: California Greenhouse Gas Emissions for 2000 to 2013 – Trends of Emissions and Other Indicators at 2 (Jun. 16, 2015), [http://www.arb.ca.gov/cc/inventory/pubs/reports/ghg\\_inventory\\_trends\\_00-13%20\\_10sep2015.pdf](http://www.arb.ca.gov/cc/inventory/pubs/reports/ghg_inventory_trends_00-13%20_10sep2015.pdf).

<sup>7</sup> *Decision Regarding Underlying Vehicle Grid Integration Application and Motion to Adopt Settlement Agreement*, Application of San Diego Gas & Electric Company (U902E) for Approval of its Electric Vehicle-Grid Integration Program and Related Matter, A. 14-04-014 & R. 13-11-007 at 13, 95-96 (issued Feb. 4, 2016) (Final Decision).

<sup>8</sup> *Amended Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge – Appendix A: SB 350 Transportation Electrification Application Guidance Straw Proposal*, Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies, R. 13-11-007 at A-1 (filed Mar. 30, 2016).

<sup>9</sup> Senate Bill 350 (de León), Section 740.8 (2015).

<sup>10</sup> Anthony Star, *et al.*, *Evaluating Residential Real-Time Pricing: Connecting Customer Response to Energy Market Impacts*, [http://www.elevateenergy.org/wp/wp-content/uploads/2014/01/Evaluating\\_Residential\\_Real\\_Time\\_Pricing.pdf](http://www.elevateenergy.org/wp/wp-content/uploads/2014/01/Evaluating_Residential_Real_Time_Pricing.pdf); Lupe R. Jimenez, *et al.*, *SmartPricing Options Interim Evaluation: An interim evaluation of the pilot design, implementation, and evaluation of the Sacramento Municipal Utility District’s Consumer Behavior Study* (Oct. 23, 2013), [https://www.smartgrid.gov/sites/default/files/MASTER\\_SMUD%20CBS%20Interim%20Evaluation\\_Final\\_SUBMITTED%20TO%20TAG%2020131023.pdf](https://www.smartgrid.gov/sites/default/files/MASTER_SMUD%20CBS%20Interim%20Evaluation_Final_SUBMITTED%20TO%20TAG%2020131023.pdf).

consideration of rate design in the straw proposal in order to provide financial benefits to ratepayers – not to mention the societal benefits to customers of putting EVs on the grid that aid in the integration of increasing amounts of renewable energy.

C. The EV straw proposal should ensure effective load management.

The need for utilities to ensure effective load management is absent from the straw proposal and needs to be included. As more renewables come onto the grid in the state’s transition to a 50 percent Renewable Portfolio Standard, it will be increasingly important to have mechanisms in place that allow for the successful integration of more clean energy resources. With increasing quantities of solar and wind being added to California’s grid and the broader Western Electricity Coordinating Council (WECC), the presence of “excess” zero-marginal cost (i.e., wind and solar have zero-cost fuel inputs) and zero-emissions energy will be increasingly available for charging EV batteries. The chart below is based on data provided from the California Independent System Operator (CAISO), which models a 40% RPS scenario in 2024. It shows that hourly prices will be very low, even negative, during the mid-day hours.

Figure 1: Chart of Projected 2024 CAISO Day-Ahead Hourly Prices under a 40% RPS for October (8 am to 5 pm)

Day	Hour 8	Hour 9	Hour 10	Hour 11	Hour 12	Hour 13	Hour 14	Hour 15	Hour 16	Hour 17
1	34.04	31.02	26.37	25.35	26.02	26.37	28.93	31.95	34.45	50.99
2	40.70	32.16	26.51	14.21	-3.01	27.67	32.16	34.45	40.33	54.90
3	36.62	32.24	29.41	29.52	29.62	29.62	34.45	36.16	48.70	58.81
4	43.02	26.69	25.71	26.22	26.59	27.42	32.09	33.50	47.04	64.92
5	32.08	-300.00	-300.00	-300.00	-300.00	-300.00	-300.00	-300.00	-300.00	44.99
6	31.13	-253.07	-300.00	-300.00	-300.00	-300.00	-300.00	-300.00	30.33	55.94
7	36.12	28.49	23.14	21.84	-300.00	14.21	22.64	30.73	39.53	57.05
8	40.61	26.16	26.16	25.68	25.91	26.16	26.26	33.62	35.92	50.48
9	38.07	29.11	25.10	25.38	14.21	25.81	27.42	34.08	40.63	54.93
10	38.40	33.34	25.24	20.63	26.42	26.59	32.17	33.92	37.90	61.29
11	39.66	30.03	26.93	26.93	26.93	26.59	31.79	35.66	46.64	78.52
12	34.81	-300.00	-300.00	-300.00	-300.00	-300.00	-300.00	-300.00	24.85	44.82
13	50.24	-240.00	-300.00	-300.00	-300.00	-300.00	-300.00	-300.00	23.40	50.38
14	42.37	28.58	23.50	23.62	23.39	23.39	24.26	28.58	33.35	54.83
15	60.51	31.95	27.93	29.94	29.94	29.94	31.95	31.95	40.32	60.30
16	48.61	34.44	32.40	32.40	32.40	32.31	32.64	33.63	40.64	53.52
17	41.32	32.43	32.40	32.43	32.43	32.43	32.43	32.43	37.82	52.04
18	48.41	30.93	26.42	26.32	26.10	-5.62	26.32	30.89	37.38	57.14
19	33.30	28.44	21.48	-296.38	-300.00	-300.00	-300.00	21.48	31.46	52.97
20	39.94	31.95	32.36	31.11	21.99	21.99	25.46	31.95	40.43	46.64
21	46.29	37.03	37.03	37.33	37.03	37.03	37.03	37.03	43.34	50.48
22	93.88	37.03	35.07	35.07	35.07	35.07	35.07	35.07	35.62	50.94
23	88.47	33.92	32.40	32.40	32.40	32.40	32.40	33.92	35.14	58.99
24	77.94	33.11	31.44	32.24	27.93	26.42	32.24	33.46	35.79	55.88
25	53.59	34.70	34.53	34.45	34.45	34.45	34.53	34.70	40.43	50.94
26	33.60	33.60	33.60	30.16	25.24	-300.00	25.71	26.28	33.46	53.51
27	45.76	30.63	23.30	23.30	-300.00	-299.33	-299.33	26.37	33.93	52.94
28	53.16	34.22	34.22	34.22	34.22	34.22	34.22	34.22	42.52	78.09
29	63.53	33.15	24.85	24.85	24.85	24.85	26.42	33.73	37.47	58.97
30	54.03	31.95	25.24	26.33	26.53	26.60	30.37	31.95	36.66	57.05
31	52.94	34.44	33.92	33.33	33.33	33.33	33.33	33.33	37.03	54.33

Source: CAISO LTPP Testimony<sup>11</sup>

<sup>11</sup> Prices were derived from research presented in CAISO's long-term procurement plan proceeding testimony. See California Independent System Operator, *Phase I.A. Direct Testimony of Dr. Shucheng Liu on Behalf of the California Independent System Operator Corporation*, Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans, R. 13-12-010.

The implication of this information is that the CAISO day-ahead hourly price will present an increasingly large differential at peak and off-peak times – therefore providing an increasingly compelling reason to charge EVs in the middle of the day.

Put another way, for EVs to provide the most benefit to the grid, they need to be charging at the right times. For this reason, EDF continues to support the placement of charging infrastructure at workplaces – in order to store renewable energy and draw upon it when it would otherwise be unavailable, there needs to be sufficient infrastructure in place for EV drivers to be able to charge in the middle of the day. Both SCE<sup>12</sup> and SDG&E<sup>13</sup> have provisions in their EV pilots for load management, and target placement of infrastructure to those locations that can help integrate renewable energy, recognizing the importance of this requirement in meeting state clean energy and climate goals. On this matter, the EV straw proposal should be no different, particularly given the ambitious goals set forth by SB 350.

2. *In light of current industry development and technology availability, should the Commission focus on particular transportation sectors or market barriers (e.g., light, medium or heavy duty vehicles, fuel types, or specific applications), and why?*

EDF agrees with the idea in multiple presentations at the Workshop that there needs to be a focus not only on light-duty vehicles, but those in the medium and heavy-duty sector as well.<sup>14</sup>

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<sup>12</sup> *Motion for Approval of Phase 1 Settlement Agreement Between and Among Southern California Edison Company (U 338-E), American Honda Motor Co., Calstart, The California Energy Storage Alliance, Chargepoint, Inc., Coalition of California Utility Employees, Environmental Defense Fund, General Motors, LLC, Greenlining Institute, Natural Resources Defense Council, NRG Energy, Inc., The Office of Ratepayer Advocates, Plug In America, Sierra Club, The Utility Reform Network, and Vote Solar*, Application of Southern California Edison (U338E) for Approval of its Charge Ready and Market Education Programs, A. 14-10-014 at 5 (filed Jul. 9, 2015).

<sup>13</sup> *Joint Motion for Adoption of Settlement Agreement*, Application of San Diego Gas & Electric Company (U902E) for Approval of its Electric Vehicle-Grid Integration Pilot Program and Related Matter, A. 14-04-014 & R. 13-11-007 at 8 (filed Jun. 3, 2015).

<sup>14</sup> *Transportation Electrification – Creating Synergy with local, regional, and state planning goals*, Presentation of Rebecca Lee, Policy and Planning Division, at R. 13-11-007 April 29, 2016 Workshop; California Initiatives Part 1: Air Resources Board – Projecting Transportation Demand for Electricity, Presentation of the California Air Resources Board at R. 13-11-007 April 29, 2016 Workshop.

This is corroborated by SB 350's recognitions that, in order to meet GHG targets, widespread electrification is critical.<sup>15</sup>

In addition, there is a need to establish a regulatory pathway for the use of vehicle-to-grid (V2G) services. As stated earlier in these comments, by moving demand for electricity to times of surplus and away from times when the grid is stressed (e.g., summertime peak, springtime morning and evening ramps), EVs can contribute to grid stability and allow for increased use of renewable energy without necessitating curtailment of these clean resources. EVs could also serve as a fast-ramping resource to improve flexibility if V2G services are approved with appropriate incentives for customers to feed electricity into the grid during peak hours and are integrated into long-term planning.

3. *What needs for standards development, research and development, or pilot projects exist that should be addressed by the Commission? What ongoing initiatives may be ready for increased scale?*

Ongoing utility EV pilots by all three major investor-owned utilities should be leveraged. Assuming these pilots meet the goals established in each, they can provide important lessons learned for leveraging EV services, properly placing infrastructure, and managing load. This is particularly true if these pilots are allowed to continue past Phase 1. As well, ongoing opt-in time-of-use (TOU) pilots by utilities can reveal important information about educating customers on the benefits of dynamic rates. In particular, rates that reward customers for using distributed energy resources could be helpful in determining how to best incentivize charging during times when it would provide the most benefit to the grid and the environment.

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<sup>15</sup> Senate Bill 350 (de León), Section 740.12 (2015).



4. *What should the application guidance ruling consider about the issues raised in the ARB workgroup meeting of April 8, 2016, and the issues raised at the April 29, 2016 workshop?*

The guidance ruling should consider the issues EDF laid out in Question 1 – namely, consideration of new utility business models, the importance of effective rate design in incentivizing increased use of EVs, and the need for effective load management.

### **III. CONCLUSION**

EDF thanks the Commission for the opportunity to provide comments on the Workshop and the straw proposal contained in the Scoping Memo and looks forward to continued participation.

Respectfully signed and submitted on May 18, 2016.

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